

High Temperature, Through the Case Eddy Current Sensor for Blade Vibration Measurements, Phase I

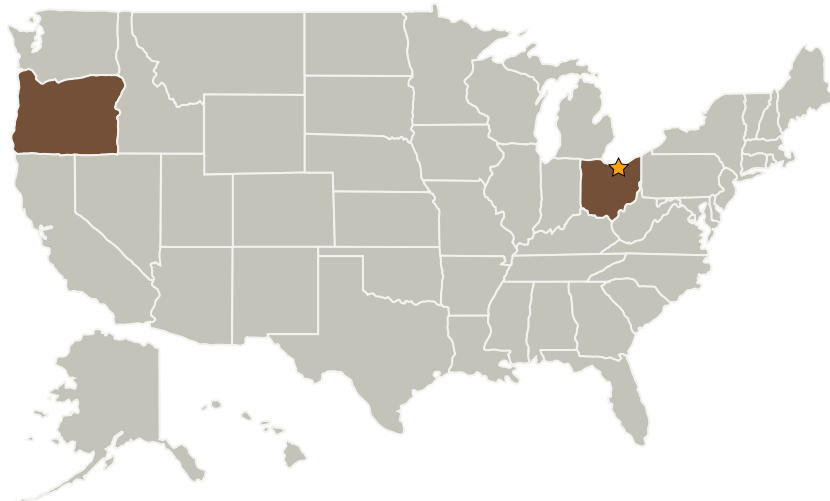
Completed Technology Project (2004 - 2004)



Project Introduction

Preliminary results have shown that low temperature eddy current sensors can provide excellent resolution for blade tip timing, and have the ability to see ? through the case? of an engine and measure blade passings, without having to drill into the case material or subject the sensor to the harsh environment of the gas flow. What is needed is a rugged, high resolution sensor that can be used for applications up to turbine temperatures, and that can easily overcome issues of velocity dependent calibration, low pass filtering through cases, varying case materials and thicknesses, high temperature, and limited standoff distances. Eddy current is the only technology that can provide the solution to these problems, and at the same time operate in dirty environments (oil, steam, etc.) This SBIR plans to develop an eddy current sensor technology that can be used at turbine temperatures, be mounted outside the engine case, work in hostile environments and provide Generation 4 resolution for Non-Intrusive Stress Measurements (NSMS) of turbine blades.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Hood Technology Corp	Supporting Organization	Industry	Hood River, Oregon



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations

Ohio

Oregon

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Andreas Von Flotow

Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.3 In-Situ Instruments and Sensors
 - └ TX08.3.6 Extreme Environments Related to Critical System Health Management